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Retardation in the Elementary Schools of Philadelphia

By

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A THESIS SUBMITTED TO THE FACULTY OF THE GRADUATE
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RETARDATION IN THE ELEMENTARY SCHOOLS OF PHILADELPHIA.

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I.

In the following study all pupils will be classed as retarded, who are one year or more behind the "normal" grade for their age. The universality of retardation is what first strikes the student of the problem. Whenever there is a school system, this phenomenon is present. Upon further consideration, however, we must recognize that retardation is dependent to a great extent upon the natural inequalities of the human mind, which may be of any grade from the lowest to the highest intelligence. At one end of the series we have the profound idiot, at the other the genius. Somewhere between these extremes we find the average or "normal" mind. The curricula of the public school systems are supposed to be adapted to this average, normal, or standard. Of course this average mind will not be one determined by a strict criterion, but will range within certain limits. Minds below the lower limit will not fit into a school system based upon this average, and a certain amount of retardation will always exist. Investigation, however, reveals the fact that many pupils of average intelligence are retarded to such an extent that the school systems have been called in question as inefficient.

Besides natural inferiority of mind, there are several other factors which cause retardation, the most important of these being irregular attendance and lack of proper medical inspection. These factors are present in all school systems to a greater or less extent, yet there are great differences in the amount of retardation among the different systems.

In studying the retardation of any system, the relation of the retarded to the normal and to the accelerated should be taken into account if we are to obtain an adequate idea of the relative worth of the system.

The present study is an investigation of retardation in the elementary public schools of Philadelphia, and a word as to the organization of the system will make clearer the significance of the results. At the head is a Superintendent of Public Instruction, who is assisted in his duties by four Associate Superintendents. The city is divided into ten districts, each under a Dis-

trict Superintendent. Each district includes within its jurisdiction several contiguous political wards. In all there are 232 schools having an average enrolment of 81,768 boys and 82,127 girls, a total of 163,895 pupils. Age tabulations are taken on the number of pupils in actual attendance on one day of the year, and the regulation retardation blank is used for this purpose. A child eight years or over in the first grade is considered retarded; nine years or over in the second grade, and so on through the grades. In the present study the age tabulations for 1909 are used as a basis, and occasional reference is made to those of 1908 and 1910 for comparison.

Retardation for the Years 1908, 1909 and 1910.

From Dr. Oliver P. Cornman's study of the "Retardation of the Pupils of Five City School Systems,"¹ we see that the different cities vary greatly in the percentage of retardation. In a more detailed study of any particular system it is desirable to ascertain whether the rate of retardation is uniform throughout the system or not. The ten districts readily lend themselves to such a study.

In 1908 the highest amount of retardation for boys was 50.6 per cent in District 3, and the lowest 37.9 per cent in District 10, a difference of 12.7 per cent; for girls 46.5 per cent in District 4, and 32.8 per cent in District 10, a difference of 13.7 per cent; and for both 48.3 per cent in District 3, and 35.4 per cent in District 10, a difference of 12.9 per cent.

In 1909 we find the following range of difference in the amount of retardation in the districts: boys, from 48.1 per cent in District 3, to 35.9 per cent in District 10, a difference of 12.2 per cent; girls, from 45.8 per cent in District 3, to 30.6 per cent in District 10, a difference of 15.2 per cent; both, from 47.0 per cent in District 3, to 33.3 per cent in District 10, a difference of 13.7 per cent.

In 1910 the greatest amount of retardation for boys was 48.4 per cent in District 3, and the least 34.6 per cent in District 7 a difference of 13.8 per cent; for girls 45.7 per cent in District 3, and 30.7 per cent in District 10, a difference of 15 per cent; and for both 47.6 per cent in District 3 and 33.0 per cent in District 7, a difference of 14.6 per cent.

The other eight districts range in retardation between the extremes just cited. It is apparent that different causes are working in different degrees in these districts to cause the variations in the amount of retardation among them. The following table

¹ THE PSYCHOLOGICAL CLINIC, Vol. I, 1907-08, p. 245.

summarizes the retardation of the ten districts for the years 1908, 1909, and 1910:

TABLE I. RETARDATION BY DISTRICTS

District	1908			1909			1910		
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both
1.....	46.4	43.0	44.7	41.9	41.7	41.8	41.0	39.0	40.1
2.....	47.1	45.3	46.2	45.9	43.2	44.5	44.7	42.7	43.7
3.....	50.4	46.0	48.3	48.1	45.8	47.0	48.4	45.7	47.6
4.....	48.8	46.5	47.6	46.0	44.4	45.1	42.9	40.4	41.6
5.....				46.1	43.3	44.7	42.6	41.7	42.1
6.....	42.0	39.5	40.8	37.2	37.3	37.2	35.6	35.6	35.6
7.....	40.3	35.5	38.0	36.8	34.2	35.5	34.6	31.5	33.0
8.....	42.7	37.0	39.8	40.1	36.9	38.5	37.9	34.5	36.2
9.....	38.3	35.3	37.0	37.5	34.5	36.0	36.1	32.7	34.4
10.....	37.9	32.8	35.4	35.9	30.6	33.3	36.1	30.7	33.3
Totals	44.3	40.4	42.4	41.5	39.2	40.3	40.1	37.6	38.8

Studying this table we note its remarkable regularity. Each year in each district the retardation of the boys is less than that of the previous year; each year in each district the retardation of the girls is less than that of the previous year; each year in each district the totals are less than the totals of the previous year. We can almost see retardation being forced down by some external cause. Since the problem of retardation is occupying the attention of most departments of superintendence, we may infer that this decrease is due to supervision. The following table summarizes the retardation statistics for the three years in question:

TABLE II.

	Boys.	Girls.	Both.
1908	44.3	40.4	42.4
1909	41.5	39.2	40.3
1910	40.1	37.6	38.8

Not only the districts but the grades, with a few trifling exceptions, show the same uniform reduction in retardation.

TABLE III. RETARDATION BY GRADES

Grades	1908			1909			1910		
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both
8.....	36.1	35.9	36.0	31.2	31.3	31.3	30.2	30.5	30.4
7.....	39.3	37.0	38.1	35.5	35.9	35.7	36.5	36.6	36.6
6.....	52.5	47.3	49.0	48.1	47.1	47.6	47.7	49.6	48.7
5.....	56.6	52.0	54.3	54.8	54.1	54.5	54.8	51.3	53.0
4.....	57.1	53.5	55.3	56.2	51.2	53.7	52.9	48.7	50.8
3.....	54.0	47.3	50.6	50.5	45.5	48.0	48.4	42.7	45.5
2.....	43.4	37.3	40.4	39.1	34.6	36.9	36.3	31.4	33.9
1.....	21.9	20.2	21.1	20.1	18.5	19.2	19.1	17.1	18.1
Totals.....	44.3	40.4	42.4	41.5	39.2	40.3	40.1	37.6	38.8

No one familiar with the problem of retardation would look for equal amounts of retardation in the different grades. The grade figures for the whole city, arranged in order of the amount of retardation, are for 1909:

TABLE IV.

5th grade	54.5 per cent
4th "	53.7
3d "	48.0
6th "	47.6
2d "	36.9
7th "	35.7
8th "	31.3
1st "	19.1

Total 40.3 per cent

The figures for 1910, although somewhat smaller, follow those of 1909 in order of grades.

Summary:

(1) The ten districts vary considerably among themselves in amount of retardation.

(2) There has been a uniform reduction in the amount of retardation during the past three years in the city as a whole, in each district, and with a few exceptions in each grade.

(3) Supervision is probably an important factor in this reduction of retardation.

Attendance.

Some investigators have considered attendance to be the leading factor in retardation. A comparison of retardation figures with the statistics of attendance given in the Superintendent's annual report, fails to reveal any correlation. For 1909 District 3 has the greatest amount of retardation, 47.0 per cent, and an average attendance of 90.9 per cent; while District 10 has the lowest retardation, 33.3 per cent, and an average attendance of 89.9 per cent. The ten districts show the following percentages of retardation and attendance respectively:

TABLE V.

District.	Retardation.	Attendance.
3	47.0	90.9
4	45.1	89.2
5	44.7	88.3
2	44.5	89.8
1	41.8	89.9
8	38.5	88.8
6	37.2	88.6
9	36.0	89.3
7	35.5	90.1
10	33.3	89.9

In order to obtain a measure of the general tendency of a relationship between two variable quantities with unknown zero points and units directly incommensurable, it is necessary to find the coefficient of correlation. The Pearson method obtains as its measure of the relationship a single number which may be anywhere between 1.00 and -1.00. The method of calculating the Pearson coefficient of correlation is to multiply the deviation of each observation from the average in one trait, by its deviation from the average in the other; to add the products thus found and divide the sum by the number of cases times the standard deviation of the first trait times the standard deviation of the second trait. That is, the coefficient of correlation

$$r = \frac{\sum x. y}{n \sigma_1 \sigma_2}$$

The coefficient of correlation obtained by this method for the relationship between retardation and attendance for the year 1909 is .05, which signifies practically a lack of correlation. A study

of the grade figures shows a similar lack of correlation between the percentages of retardation and of attendance. From this it would seem that attendance is a minor factor in causing retardation, but this is evidently untrue, for two reasons. In the first place the percentage of retardation is being compared with the percentage of attendance for the same year. The attendance in any year cannot be a cause of retardation for the same year, although percentages of attendance vary but little from year to year. Secondly, the method of calculating attendance is apt to convey a false impression of the actual conditions in the various schools and districts. The attendance here, as in most school reports, is given in the form of a per cent of the average number belonging or the average number present for month and year. In such a calculation a difference of one or two per cent may mean a difference of hundreds of half-day attendances, and even tenths of a per cent may mean no small factor. No doubt the true way to estimate the exact influence of irregular attendance on retardation would be to keep a record of the number of half-day attendances for each pupil and compare the results with the promotion record of the same pupil.

It is to be noted that District 3, with the highest percentage of retardation, is a compact foreign district; while District 10, with the lowest percentage, is a rural American district, so it would seem that other factors, in this case the nature of the sociological unit, may overbalance the factor of attendance.

The influence of attendance may be seen by comparing the attendance of the colored schools with that of the district in which they are located. The J. Miller School has an average attendance of 83.7 per cent, District 1 an average attendance of 88.3 per cent; the Pollock School has an attendance of 83.5 per cent, District 3, 90.4 per cent; the Catto School has an attendance of 80.7 per cent, and the Ramsay School, 76.3 per cent, District 4, 87.7 per cent; the Vaux School has an attendance of 76.0 per cent, District 6, 87.6 per cent; the Hill School has an attendance of 80.2 per cent, the Meehan School, 80.0 per cent, District 9, 88.7 per cent; the Wilmot School has an attendance of 84.7 per cent, District 10, 89.0 per cent. When retardation in the colored schools is discussed it will be seen that in every case it is approximately from 10 to 20 per cent higher than that for the district.

Summary:

(1) The method of reckoning attendance used in compiling school reports gives results which are of small value for statistical purposes.

(2) While the tables do not show any correlation between retardation and attendance, no doubt such relationship exists, and is an important but not the predominating factor in causing retardation, being overbalanced in various districts by a single potent factor or several factors working together.

Retardation in Relation to the Sociological Unit.

The city of Philadelphia spreads over a considerable area. Originally many parts of the present city were towns in themselves, which have been incorporated into the city in the course of its growth. Many of these sections still retain their old characteristics. The center of the city contains the great business section. South of this we find the foreign element, consisting mostly of Italians and Russian Jews. In the northeast there is a great factory district, in the northwest a wealthy residential district including Tioga and Germantown. West Philadelphia is characterized by the homes of the average American workingman.

The ten districts, generally speaking, may be said to have the following characteristics: District 1, rather poor social class working in factories in the 40th and 36th wards, with a better residential section in the 46th and 27th wards; District 2, Americans of the lower class, with a large foreign element; District 3, almost entirely foreign, with a considerable colored element; District 4, business section, old aristocratic section, large colored element, and west of the Schuylkill residential; District 5, residential, with large colored element, business section; District 6, large foreign element, large colored element, poor laboring class, and in the 32d ward a better residential section; District 7, factory section; District 8, good residential section, also factories; District 9, good residential section with one factory ward; District 10, rural outlying district, factory districts with small settlements of foreigners. We can readily see that District 3, composed almost wholly of foreigners, and District 4, with a large negro element, have the greatest amount of retardation; and that Districts 2, 5 and 1, with a considerable foreign element and poor home conditions, follow. District 6, although having a large foreign element, has a counterbalancing factor in a better residential section. District 8, besides a large residential section, has a considerable factory element to augment the retardation. District 7 has a low percentage of retardation, although of a rather low social order, but its low rate of retardation will be seen to be due in part to the high elimination rate and to the absence of the negro element. Districts 9 and 10 with low retardation rates are partly rural and residential.

We can see that each district is too large to permit us to establish a relation between the social condition and retardation, except in a general way. Each district, however, is composed of a number of political wards, some of which are nearly homogeneous socially. In District 1 the retardation is 41.8 per cent, the wards with poor social conditions showing about 3 per cent more retardation and the better residential wards about 3 per cent less. For District 2, with 44.5 per cent of retardation, the ward retardation is fairly uniform. In District 3, with a retardation of 47.0 per cent, the greatest variation is in the 30th ward, which has 42.9 per cent. In District 4, with a retardation of 45.1 per cent, the 7th ward has 62.2 per cent (colored), and the 9th ward 57.8 per cent. The latter is a business section with very poor and heterogeneous elements in the smaller streets. In District 5 the retardation is 44.7 per cent, and shows the 10th ward with 53.7 per cent of retardation. This is also a business section with many apartment houses, and with a poor social element in the side streets. District 6, with 37.2 per cent of retardation, shows 45.1 per cent in the 14th ward, which has a considerable negro element besides a large number of foreigners. The 32d ward, which is a very good residential section, has a retardation rate of only 33.6 per cent. District 7, with 35.5 per cent of retardation includes the factory wards, and there is not much difference in the percentage of retardation among them. District 8, with 38.5 per cent of retardation includes the 21st ward with 34.3 per cent, showing the effect of rural conditions. District 9, with 36.0 per cent of retardation, shows the 22d ward with 40.1 per cent. This ward includes two colored schools. The 43d ward has a retardation rate of 34.6 per cent. This is a good residential section. District 10, with 33.3 per cent of retardation, shows 29.9 per cent in the 25th ward and 37.3 per cent in the 45th ward. The former is a factory district, which has a rather low rate of retardation owing to the high elimination, while the latter contains a large percentage of foreigners, with a number of parochial schools, which always increase the rate of retardation.

Many wards are differently constituted socially in their various parts, so that it would be profitable to investigate further the separate schools in each ward. The table on page 9 gives in more detail the social components of District 6.

District 6 comprises five wards. In the 12th ward, which contains only two colored schools, the retardation is 34.8 per cent, although the schools contain 80 and 90 per cent of foreigners, but

TABLE VI.

Wards and Schools	Ward Retardation	Divisions				Number	Retardation	Social Components
		G	P	K	T			
12th.....	34.8							
Mifflin.....		0	17	2	19	821	32.3	Foreign of low social condition, 90 %.
Paxson.....		0	21	4	25	1088	36.6	Foreign of low social condition, 80%.
13th.....	41.8							
Warner.....		0	13	2	15	639	37.7	Foreign of low social condition, 80%, with slight colored element.
Wyoming.....		18	5	1	24	927	44.1	Foreign of low social condition, 80%.
14th.....	45.1							
Hancock.....		10	17	2	29	1256	47.4	Residential of lower order, colored 14%, foreign 30%.
Spring Garden*.....		0	7	2	9	386	28.0	Foreign of low social condition, 75%.
Vaux.....		1.5	3.5	1	6	205	66.3	Colored school.
20th.....	40.6							
Lynd.....		8	13	2	23	984	44.3	Residential of lower order, 25% colored, 70% foreign.
Penn.....		0	12	3	15	619	36.6	Foreign of lower order, 80%.
Rutledge.....		17	12	1	30	1323	38.1	Residential, 10% foreign, negroes.
Webster.....		0	10	1	11	475	32.3	Residential of lower order, 40% foreign, negroes.
Widener.....		12	9	0	21	937	44.2	Residential, 10% foreign 12% colored.
32d.....	33.6							
Allison.....		3	11	1	15	615	29.0	Residential of higher order, good conditions.
Blaine.....		18	9	0	27	1201	35.7	Residential of higher order, 10% foreign.
Camac.....		5	12	2	19	838	38.9	Residential of higher order.
Claghorn.....		16	10	2	28	1235	33.5	Residential of higher order, 10% foreign.
Singerly.....		11	10	0	21	957	36.5	Residential of higher order, 5% foreign.
Stokley.....		0	11	2	13	556	21.5	Residential of higher order, very good conditions.

*Spring Garden School has grades 1 and 2 only.

these schools contain grades 1 to 4 only. In the 13th ward the Warner School, with 80 per cent of foreigners, has 37.6 per cent of retardation. The Wyoming School has 44.1 per cent of retardation, about the average percentage for schools having a large foreign element. The schools of the 20th ward have a rather low percentage of retardation, considering the social components of the schools. The Lynd School has 44.3 per cent of retardation, with 70 per cent foreign and 25 per cent colored. The 32d ward shows a considerable decrease in retardation, the ward retardation being only 33.6 per cent, with no school varying much from the average except the Allison School, with only 29.0 per cent of retardation, and the Stokley School with 21.5 per cent. These schools are not fully graded, and draw their pupils from very good residential districts.

We see that city, district, ward, and school are made up of distinct sociological units. In each of these units the home conditions are widely different. In those districts where retardation is greatest, the sociological unit proves to be the one in which home conditions are most unfavorable and even antagonistic to educational influence. A course of study has been prescribed for the city as a whole, as if the various districts were homogeneous units, equal sociologically and intellectually. This course of study is to be followed as closely for the foreigners in District 3, as for the native Americans in District 10. Can we expect equal results when we apply the curriculum inflexibly to these widely divergent social units? We must conclude that retardation is in a great measure the resultant of unfavorable home conditions, combined with an inflexible curriculum.

Supervision may overcome to a certain extent adverse conditions, by taking these facts into consideration. The standards of requirement must be differently applied to the different sociological groups. In District 6, for example, we expect to find a large percentage of retardation, for here are a large foreign element, a large colored element, and (with the exception of the 32d ward) poor social conditions; yet in this district with a comparatively poor element from which to draw, we find a comparatively low rate of retardation. Why is it that the retardation in schools with 60 to 80 per cent of foreigners does not begin to be as great as that in schools in other districts where conditions are approximately the same? This district has been under the superintendence of one

who has been especially interested in the problem, and it would be fair to say that the course of study has been interpreted less rigidly and more in accord with the needs of the sociological unit.

A closer study of the colored and foreign elements brings to light facts which substantiate the conclusions already drawn.

The Colored Element.

In most of the schools of Philadelphia, white and colored pupils are mixed in varying proportions, according to the district. There are nine schools for colored children exclusively. The following table shows a surprising contrast between these schools and the others:

TABLE VII. RETARDATION IN THE COLORED SCHOOLS

School	District	Divisions				Grades	Number	Retard- ation	Attend- ance
		G	P	K	T				
J. Miller.....	1	0	2	1	3	1-4	148	68.2	83.7
Pollock.....	3	0	10	1	11	1-4	413	60.6	83.5
Catto.....	4	1	6	1	8	1-5	336	67.3	80.7
Ramsey.....	4	0	9	1	10	1-4	434	70.9	76.3
Purvis.....	4	0	1	0	1	1-4	31	46.4	93.5
Vaux.....	6	1.5	3.5	1	6	1-6	205	66.3	76.0
Hill.....	9	2	5	1	8	1-8	385	72.0	80.2
Meehan.....	9	0	3	1	4	1-4	175	58.2	80.0
Wilmot.....	10	1	2	0	3	1-8	138	59.3	84.7

In District 1 the J. Miller School has 68.2 per cent of retardation, against 41.8 for the district, the school having the next highest amount of retardation being the Boon's Dam, with 49.1 per cent (8 per cent colored). In District 3 the Pollock School has 60.6 per cent of retardation, against 44.5 per cent for the district, the school having the next highest amount of retardation being the Florence, with 56.0 per cent (nearly 100 per cent foreign). In District 4 the Catto School has 67.3 per cent of retardation, and the Ramsey 70.9 per cent, against 45.1 per cent for the district. The Keystone School, 44 per cent colored, has the next highest amount of retardation, 57.8 per cent. In District 6 the Vaux School has 66.3 per cent of retardation, against 37.2 per cent for the district. The Hancock School (13 per cent

colored), with 47.4 per cent retardation, has the next highest percentage. In District 9 the Hill School and the Meehan have 72.8 per cent and 58.2 per cent of retardation respectively, against 36 per cent for the district. The Gilbert School (6 per cent colored), with 51.6 per cent, stands next. The high percentage of retardation here, however, seems to be due to local causes, as the Harmer, which is next below, has only 45.0 per cent, and the percentages of retardation of the schools below this fall off normally. In District 10 the Wilmot School has 59.3 per cent of retardation, against 33.3 per cent for the district, the next school being the Martin, with 51.1 per cent. This school has a large foreign element and also draws a number of its pupils from three parochial schools in the neighborhood. The Marshall School follows the Martin, with 46.5 per cent, after which comes the Lawn-dale, with 40.2 per cent, which is more typical of the district.

In every case the colored schools are far above the others in the amount of retardation. Taking the schools with 20 per cent colored children or over, we can see an increase as a whole in retardation. With 8188 colored pupils showing so great an amount of retardation, it is obvious that the total retardation is affected. In comparing the grades this colored retardation is a considerable factor, as the colored pupil does not often get above the sixth grade before leaving school. One result of this is to swell the amount of retardation in the fourth and fifth grades.

If we look over the retardation of the several districts we see that District 7 has practically no negro element and that in Districts 8 and 10 the negro element is only 2.1 per cent and 1.4 per cent respectively. District 6, on the other hand, has a large percentage of colored pupils (7.1 per cent) and still has a comparatively low rate of retardation. Districts 3 and 4 have the largest percentages of retardation and also the largest proportion of negroes. It is not contended that the negro element is the principal cause of the greater retardation in these districts, but that it is one of the factors. This sociological element influences the whole system and adds to the amount of retardation. It is a question whether the course of study is suited to the negroes, as the educational results are so far behind those in the other schools, and it is very doubtful whether even a liberal interpretation of the course of study would meet the educational necessities of this group.

II.

The Foreign Element.

The foreign element raises the retardation above the average for the city, but not to as great an extent as the negro element. In studying this phase of the problem, such detailed statistics as obtained for the colored pupils were not available. We have secured, however, a list of the schools in Districts 1, 2, 3, 5, 6 and 10 with over 25 per cent of foreign pupils. Districts 8 and 9 have no schools with over 25 per cent foreign. By foreign is here meant those whose home conditions are characterized by foreign customs and speech.

Note must be taken not only of the rate of retardation of the school, but of the number of pupils and the grades in the schools, as the retardation in schools with grades 1 to 4 only, no matter what the conditions are, will be less than in fully graded schools. This is true to a less extent of schools which contain grades 1 to 4 only. The table on page 14 shows the retardation of schools with over 25 per cent foreign pupils for six of the districts.

From this table we see that the schools with 25 per cent or more of foreign pupils range in retardation from 40 per cent upward. In some schools the percentage of foreign pupils rises to 100 per cent, but in no school does the retardation equal that of the colored children. In schools with only 25 per cent foreign, other causes may reduce retardation.

It is curious to note the relatively small percentage of retardation in some of the schools of District 6 with 80 per cent and 90 per cent foreign, besides a considerable colored element:

Mifflin School,	90	per cent	foreign,	with	32.3	per cent	retarded
Paxson	"	80	"	"	36.6	"	"
Warner	"	80	"	"	37.6	"	"
Penn	"	80	"	"	36.6	"	"
Webster	"	40	"	"	32.3	"	"

These schools contain grades 1 to 4 only, but may be compared with schools of the same grades in Districts 2 and 3, where the retardation is 40 to 50 per cent.

TABLE VIII. RETARDATION IN SCHOOLS WITH OVER 25 PER CENT FOREIGN PUPILS

Schools	Divisions				Number	Retard- ation	Attend- ance
	G	P	K	T			
District I.							
Point Breeze.....	1	4	1	6	250	40.3	92.0
Boon's Dam.....	3	8	0	11	556	49.1	88.6
District II.							
Read.....	2	18	0	20	931	44.2	91.2
Tasker.....	0	15	0	15	735	46.4	89.5
Close.....	10	14	0	24	1256	46.1	88.8
Baugh.....	11	7	0	18	841	40.9	93.0
Vare.....	14	9	1	24	1133	41.1	90.2
Calhoun.....	0	12	0	12	607	44.5	89.0
Foy.....	0	21	0	21	967	43.1	91.1
Sharswood.....	17	7	0	24	1120	47.5	88.1
Taggart.....	0	19	2	21	976	45.1	83.2
District III.							
Hay.....	0	19	0	19	984	51.3	91.9
Nebinger.....	10	12	0	22	994	54.8	92.9
Stockdale.....	0	7	1	8	352	55.2	84.6
Washington.....	0	22	4	26	1138	53.9	83.5
Wharton.....	13	25	0	38	1759	38.2	92.1
Burk.....	0	18	1	19	890	45.9	93.0
Fletcher.....	0	21	2	23	1095	44.7	89.4
Florence.....	0	17	3	20	964	56.0	88.5
Mt. Vernon.....	14	12	0	26	1273	48.6	92.9
Meredith.....	0	17	1	18	870	39.5	94.8
Ralston*.....	0	8	1	9	457	33.5	92.6
Randall.....	0	16	2	18	749	46.4	87.5
District V.							
Binney.....	14	10	1	25	1123	42.5	91.8
Forten.....	3	10	4	17	618	48.4	90.4
Wharton.....	0	28	3	31	1426	45.5	88.5
District VI.							
Mifflin.....	0	17	2	19	821	32.3	90.2
Paxon.....	0	21	4	25	1008	36.6	82.4
Warner.....	0	13	2	15	639	37.6	86.0
Wyoming.....	18	5	1	24	927	44.1	89.9
Hancock.....	10	17	2	29	1256	47.4	89.4
Lynd.....	8	13	2	23	984	44.3	88.8
Penn.....	0	12	3	15	619	36.6	87.3
Webster.....	0	10	1	11	475	32.3	87.1
District X.							
Longfellow.....	6	13	2	21	946	40.2	89.0
McClellan.....	0	18	2	20	846	32.8	89.5
Bridesburg.....	5	10	1	16	711	37.0	88.7
Martin.....	8	7	0	15	693	51.1	92.7

*Grades 1-2 only.

Summary:

(1) The home conditions of the sociological units are an important factor in retardation.

(2) The negro element is out of accord with the educational system, and is an important factor in retardation.

(3) The same thing is true of the foreign element, to a less extent.

(4) Supervision may reduce retardation by a more liberal interpretation of the course of study.

Retardation in the Schools.

When comparing the retardation of different districts, it is desirable to know whether the retardation in each district is uniform throughout or whether the average is raised or lowered by certain schools. In the table on page 16 the schools in each district are arranged in groups according to their percentage of retardation, *e. g.*, there are four schools in District 1 with between 35 and 40 per cent of retardation, four schools with between 40 and 45 per cent, and so on.

The first thing to note is the high percentage of retardation in the colored schools, the next is the comparatively low retardation of schools with grades 1 and 2, or 1 to 4, only. The retardation in Districts 2, 5, 7 and 8 is more uniform than in the other districts.

The schools in Districts 2, 3, 4 and 5 are much larger than those of Districts 9 and 10. In the former districts there are fewer fully graded schools, while in the latter group, especially District 10, the fully graded schools predominate. This is due, of course, to rural conditions. In these schools there seem to be conditions favorable to greater understanding of the individual needs of the child, owing probably to the fact that many of the schools are small and have few pupils in each grade. In the larger schools of the congested districts the lockstep of the curriculum must be preserved, even where individual instruction is most needed. This has the effect of augmenting the amount of retardation. Deficiency in certain branches, notably arithmetic and spelling, often is the cause of a pupil's failure to advance. Individual attention is not to be had, and the pupil's entire education must be neglected while he is making futile efforts to reach a fixed standard in these branches. Promotions should be made according to individual need, not by a fixed rule for the average child. A course of study must be liberally interpreted in the

TABLE IX. SCHOOLS IN EACH DISTRICT CLASSIFIED ACCORDING TO PERCENTAGE OF RETARDATION.

DISTRICT.	15-19%	20-24%	25-29%	30-34%	35-39%	40-44%	45-49%	50-54%	55-59%	60-64%	65-69%	70-74%	TOTALS.
1		1-4 1	1-4 1		4	4	8				c 1		19
2			1-2 1		2	7	8	1					19
3			1-2 1		4	1	5	4	2	c 1			18
4			1-4 1	2	5	4	6	2	2		c 1	c 2	25
5	S P 1			1	1	6	6	3	1				19
6		1-2 1-4 2	1-6 1	3	8	3	1				c 1		19
7			1-4 4	4	10	2							20
8			3	4	6	6	4						23
9	1-4 2	1	6	5	12	4	1	1	c 1			c 1	34
10		4	6	12	6	2	1	1	c 1				33
Totals	3	8	24	31	58	39	40	12	7	c 1	c 3	c 3	229

1-2 =grades 1-2 only.

1-4 =grades 1-4 only.

1-6 =grades 1-6 only.

c =colored schools.

S P =Practice school of School of Pedagogy.

classroom. In every class are found the bright pupils, the average pupils, and the slow pupils. If the amount of detail required were varied to suit the ability of these three kinds of children, much retardation would be avoided. This is only another example of what may be accomplished by supervision.

Acceleration.

In previous studies of retardation little attention has been given either to pupils of normal age for their grades, or to accelerated pupils. The following table summarizes the retardation, normal progress, and acceleration for the ten districts.

TABLE X. PERCENTAGES OF RETARDED, NORMAL, AND ACCELERATED PUPILS BY DISTRICTS ARRANGED IN ORDER OF AMOUNT OF RETARDATION.

District	BOYS			District	GIRLS			District	BOTH		
	Retarded	Normal	Accelerated		Retarded	Normal	Accelerated		Retarded	Normal	Accelerated
3	48.1	29.1	22.8	3	45.8	27.9	26.3	3	47.0	28.5	24.5
5	46.1	28.4	25.5	4	44.4	29.4	26.2	4	45.1	28.9	26.0
4	46.0	28.3	25.7	5	43.3	30.1	26.6	5	44.7	29.2	26.1
2	45.9	30.6	23.5	2	43.2	31.6	25.2	2	44.5	31.1	24.4
1	41.9	31.1	27.0	1	41.7	30.5	27.8	1	41.8	30.8	27.4
8	40.1	29.8	30.1	6	37.3	31.7	31.0	8	38.5	30.2	31.3
9	37.5	30.3	32.2	8	36.9	30.7	32.4	6	37.2	32.3	30.5
6	37.2	32.9	29.9	9	34.5	31.7	33.8	9	36.0	31.0	33.0
7	36.8	31.6	31.6	7	34.2	30.7	35.1	7	35.5	31.2	33.3
10	35.9	31.1	33.0	10	30.6	31.5	37.9	10	33.3	31.3	35.4
Totals	41.7	30.2	28.1		39.2	30.6	30.2		40.3	30.5	29.2

The percentage of pupils making normal progress ranges only between 28.5 per cent in District 3, and 32.3 per cent in District 6, an average of 30.5 per cent. This is practically the same for boys as for girls, the former being 30.2 per cent, the latter 30.6 per cent. Acceleration has a wider range, from 24.5 per cent in District 3 to 35.4 per cent in District 10. The girls are more accelerated than the boys, and are less retarded, but the percentage of girls making normal progress is about the same. Studying the separate schools in each district, it is found that the normal-progress pupils range only between 28 and 33 per cent. This holds good for the schools in Districts 3 and 4 where retardation is greatest, as well as for Districts 7 and 10 where it is least. The acceleration in the schools of the different districts varies considerably, and we may say that the acceleration varies approximately inversely as the retardation, while normal progress remains approximately a constant. The following table summarizes the retardation, normal progress and acceleration for the city.

TABLE XI.

	Retardation	Normal	Acceleration
Boys	41.7	30.2	28.1
Girls	39.2	30.6	30.2
Both	40.3	30.5	29.2

A study of the districts by grades shows that the normal remains approximately at 31 per cent for grades 8, 6, 3, 2 and 1, but falls off in grades 5 and 4, where the retardation is greatest, to 26.2 per cent and 25.9 per cent respectively. It rises in grade 7 to 36.2 per cent. The acceleration bears a more direct relation to the retardation, the grade with a high retardation rate having a low acceleration rate and vice versa. The lowest acceleration is in grades 5 and 4, which have 19.1 per cent and 20.4 per cent respectively. The highest acceleration, 49.1 per cent, is in the first grade, due, of course, to early entrance. The eighth grade has the next highest percentage, 35.1 per cent. The following table gives the summary by grades for the city.

TABLE XII. SUMMARY OF RETARDATION, NORMAL PROGRESS, AND ACCELERATION FOR THE CITY.

GRADES	BOYS			GIRLS			BOTH		
	Retarded	Normal	Accelerated	Retarded	Normal	Accelerated	Retarded	Normal	Accelerated
8	31.2	33.0	35.8	31.3	34.2	34.5	31.3	33.6	35.1
7	35.5	36.1	28.4	35.9	36.2	27.9	35.7	36.2	28.1
6	48.1	30.1	21.8	47.1	30.5	22.4	47.6	30.3	22.1
5	55.3	25.5	19.2	54.1	26.8	19.1	54.7	26.2	19.1
4	56.2	25.1	18.7	51.2	26.7	22.1	53.7	25.9	20.4
3	50.5	29.5	20.0	45.5	30.8	23.7	48.0	30.1	21.9
2	39.1	33.0	27.9	34.6	32.7	32.7	36.9	32.8	30.3
1	20.1	31.8	48.1	18.5	31.3	50.2	19.3	31.6	49.1
Totals	41.7	30.2	28.1	39.2	30.6	30.2	40.3	30.5	29.2

A further analysis of retardation and acceleration shows that the retardation extends through four years while the acceleration extends through only two years.

In all districts together there are approximately 20 per cent retarded one year, 10 per cent retarded two years, 5 per cent retarded three years, and 3 per cent in Districts 1 to 6 and 1.5 per cent in Districts 7 to 10 retarded four years. The difference in acceleration is very marked. The acceleration for one year ranges from 22.0 per cent in District 2 to 32.2 per cent in District 10, but for two years it ranges only from 2.1 per cent in Districts 3 and 4 to 3.5 per cent in District 7.

Retardation for one year is the same for both boys and girls, 21.0 per cent, but retardation for two, three and four years is higher for boys than for girls. The following table gives a summary for the city:

TABLE XIV.

	1 yr.	Retarded			Normal	Accelerated	
		2 yrs.	3 yrs.	4 yrs.		1 yr.	2 yrs.
Boys	21.0	12.1	5.5	2.6	30.2	25.7	2.6
Girls	21.0	11.0	4.8	2.2	30.6	27.5	2.6
Both	21.0	11.6	5.1	2.4	30.5	26.6	2.6

The most interesting fact in this study is brought out by a comparison of the normal and accelerated pupils for the years 1908, 1909 and 1910. These tables have been compiled in the same manner as those for the retardation for the same years for boys, girls and both, for the ten districts.

TABLE XV. NORMAL PROGRESS BY DISTRICTS FOR 1908, 1909 AND 1910.

DISTRICT	1908			1909			1910		
	BOYS	GIRLS	BOTH	BOYS	GIRLS	BOTH	BOYS	GIRLS	BOTH
1	29.5	30.6	30.1	31.1	30.5	30.8	31.4	30.8	31.1
2	29.1	30.4	29.8	30.6	31.6	31.1	30.9	31.3	31.2
3	26.6	28.0	27.3	29.1	27.9	28.5	27.6	28.2	27.9
4	27.1	29.6	28.3	28.3	29.4	28.9	29.7	30.9	30.3
5	.....	.....	.....	28.4	30.1	29.2	29.5	29.2	29.4
6	26.8	30.5	28.7	32.9	31.7	32.3	30.6	31.0	30.8
7	29.5	30.8	30.1	31.6	30.7	31.2	30.2	29.4	29.8
8	29.2	31.0	30.1	29.8	30.7	30.2	29.7	30.8	30.3
9	30.5	31.0	30.7	30.3	31.7	31.0	30.1	31.8	30.9
10	30.0	31.1	30.5	31.1	31.5	31.3	31.2	31.3	31.2
Totals	28.8	30.3	29.6	30.2	30.6	30.5	30.1	30.5	30.3

TABLE XVI. ACCELERATION BY DISTRICTS FOR 1908, 1909 AND 1910.

DISTRICT	1908			1909			1910		
	BOYS	GIRLS	BOTH	BOYS	GIRLS	BOTH	BOYS	GIRLS	BOTH
1	23.9	26.3	25.1	27.0	27.8	27.4	27.3	28.6	28.0
2	23.6	24.1	23.9	23.5	25.2	24.4	24.3	25.8	24.9
3	22.7	25.8	24.2	22.8	26.3	24.5	23.9	25.9	24.9
4	24.0	23.8	23.9	25.7	26.2	26.0	27.2	28.6	27.8
5	.....	.....	.....	25.5	26.6	26.1	27.9	28.8	28.3
6	29.5	29.8	29.7	29.9	31.0	30.5	33.6	33.3	33.5
7	30.0	33.5	31.7	31.6	35.1	33.3	35.1	37.7	36.4
8	27.8	31.8	29.8	30.1	32.4	31.3	32.2	34.5	33.4
9	31.2	33.0	32.1	32.2	33.8	33.0	33.7	35.4	34.5
10	32.0	37.2	34.5	33.0	37.9	35.4	32.6	38.0	35.3
Totals	27.2	29.5	28.4	28.1	30.2	29.2	29.7	31.5	30.6

As the retardation for the years 1908, 1909 and 1910 has decreased from 42.4 per cent to 40.3 per cent and then to 38.8 per cent, we should expect to find an increase in the amount of normal progress, but such is not the case. It is true there is a slight increase for 1909, but 1910 shows a very slight falling off. The acceleration, on the other hand, shows a corresponding regular increase for boys as well as girls, averaging 28.4 per cent for 1908, 29.2 per cent for 1909, and 30.6 per cent for 1910. From this it would seem that retardation is being increased as a result of supervision, which is pushing up pupils all along the line. This has been the true state of affairs, and furthermore, provision has been made in the system for the more rapid advancement of brighter pupils by means of the so-called "incidental promotion". The tendency thus shown to decrease the inflexibility of the curriculum is an undoubted sign of progress. The relation of retarded, normal, and accelerated pupils for the years 1908, 1909 and 1910, may be graphically represented in the table on page 116.

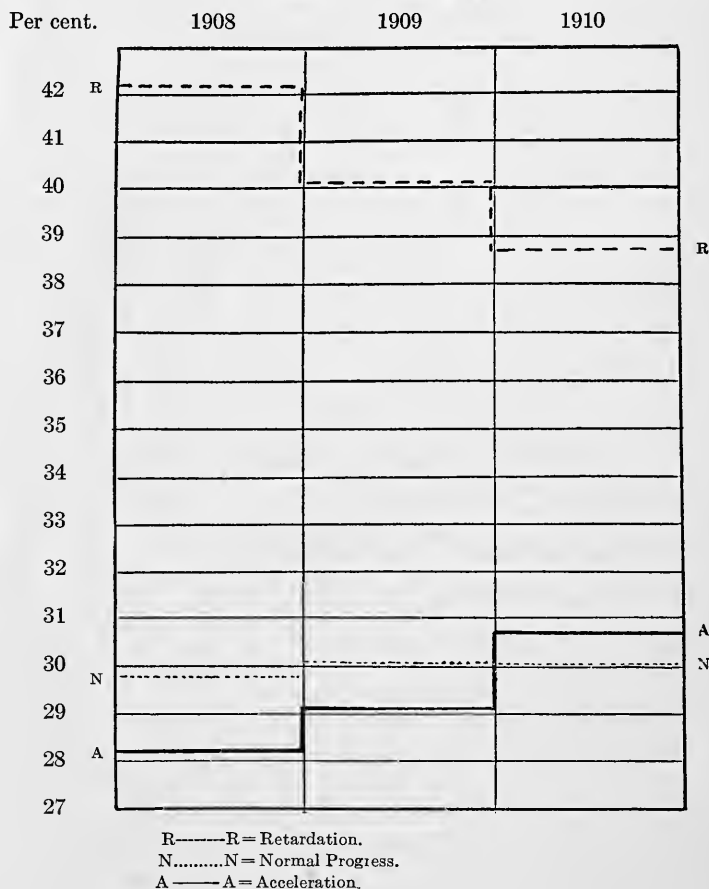
Summary:

(1) There is a considerable percentage of pupils accelerated, as well as of those retarded; 28.1 per cent of the boys are accelerated to 41.7 per cent retarded; 30.2 per cent girls accelerated to 39.2 per cent retarded; while 29.2 per cent of all pupils are accelerated to 40.3 retarded.

(2) The percentage of pupils making normal progress appears to remain a constant for boys and girls at about 30 per cent.

(3) While retardation has decreased during the past three years, the amount of normal progress has remained approximately the same, and acceleration has increased. This is to be accounted for by the effect of supervision in encouraging promotions all along the line.

TABLE XVII. GRAPHIC REPRESENTATION OF RETARDATION, NORMAL PROGRESS AND ACCELERATION.



Relation of Retardation to Number of Pupils per Teacher.

The overcrowded condition of some Philadelphia schools suggests that this condition may have an important bearing upon the relative amount of retardation in the overcrowded districts. For a study of this aspect of the problem there should be available the number of pupils in each class in each school, with the promo-

tion record of each class. This information not being accessible, the following study has been based upon the number of pupils in the primary grades (one to four) of each school and the number of primary teachers in the same school, and upon the number of pupils in the grammar grades (five to eight) with the corresponding number of grammar teachers in each school. There is an advantage in this division, as it is in the primary grades that overcrowding chiefly occurs and elimination is at the minimum.

A study of the separate schools of the districts fails to reveal any constant relation between the number of pupils per teacher and the percentage of retardation. If the results of the investigation of the separate schools are summarized by districts, it is seen that Districts 1 and 2 show five pupils per teacher more in the primary than in the grammar grades, with 5 per cent greater retardation in the latter than in the former. District 3 shows 41.8 pupils per teacher in the grammar grades to 47.8 in the primary, with 49.1 per cent of retardation in the former to 46.4 per cent in the latter. District 4 shows 41.0 pupils per teacher in the grammar, to 44.4 in the primary, with 52.4 per cent of retardation in the former to 41.2 per cent in the latter. District 5 has 40.9 pupils per teacher in the grammar to 44.5 in the primary, with 52.1 per cent of retardation in the former to 41.8 per cent in the latter. The greatest divergence between grammar and primary retardation, with the least difference in number of pupils per teacher in grammar and primary grades is in District 6, with 40.2 pupils per teacher in the grammar and 43.4 in the primary, with a grammar retardation of 45.4 per cent as against 32.6 per cent in the primary. District 7 shows 43.6 pupils per teacher in the grammar, 44.5 in the primary, with 40.2 per cent of retardation in the former and 33.2 per cent in the latter. In District 8 there are 42.4 pupils per teacher in the grammar, to 45.5 in the primary, with a retardation of 44.3 per cent in the former and 36.5 per cent in the latter. District 9 has 42.4 pupils per teacher in the grammar and 46.7 in the primary, with a retardation of 43.1 per cent in the former to 33.9 per cent in the latter. District 10 has 42.4 pupils per teacher in the grammar to 43.8 in the primary, with a retardation of 37.1 per cent in the former to 32.2 per cent in the primary.

Here again there seems to be no relation between district retardation and the number of pupils per teacher in the district. It appears that the primary grades may have more pupils per teacher than the grammar grades, and still do equally if not more

efficient work as measured by the criterion of retardation. This may be due to the higher requirements in the grammar grades. The controlling factor, as shown by the study of individual schools, seems to be the teacher. A good teacher with a large class will get better results than a poor teacher with a small one.

Elimination.

If all children remained in school until they had completed the course as prescribed for the elementary grades, the comparative amount of retardation between cities and the districts of the same city would roughly measure the efficiency of the system. At the age of fourteen years, working certificates may be obtained, and elimination begins. A district with a low percentage of retardation may have a high rate of elimination, the rate of retardation appearing low because of the fact that many pupils drop out, who, if they remained, would raise the retardation rate. The reverse may also be true, namely, a district with a high rate of retardation may have a comparatively low elimination rate. In calculating elimination the method employed by Ayres has been used.

In the following table the percentage of elimination has been computed for boys, girls and both for the ten districts:

TABLE XVIII.

A. RETARDATION *vs.* ELIMINATION OF THE TEN DISTRICTS.

District	Boys		Girls		Both	
	Retardation	Elimination	Retardation	Elimination	Retardation	Elimination
1	41.9	66.0	41.7	56.5	41.8	61.2
2	45.9	74.2	43.2	73.4	44.5	73.8
3	48.1	80.2	45.8	78.7	47.0	79.4
4	46.0	62.9	44.4	53.0	45.1	57.9
5	46.1	56.4	43.3	59.6	44.7	58.0
6	37.2	58.8	37.3	48.6	37.2	53.6
7	36.8	74.4	34.2	69.4	35.5	72.0
8	40.1	56.2	36.9	51.5	38.5	53.8
9	37.5	63.2	34.5	65.0	36.0	64.1
10	35.9	59.9	30.6	56.6	33.3	58.3
Totals	41.7	65.6	39.2	61.7	40.3	63.3

B. THE SAME ARRANGED IN ORDER OF AMOUNT OF RETARDATION.

District	Both	
	Retardation	Elimination
3	47.0	79.4
4	45.1	57.9
5	44.7	58.0
2	44.5	73.8
1	41.8	61.2
8	38.5	53.8
6	37.2	53.6
9	36.0	64.1
7	35.5	72.0
10	33.3	58.3
Totals	40.3	63.3

It will be noted that the rate of elimination for girls is less than that for boys, being 61.7 per cent for the former with 39.2 per cent of retardation, and 65.6 per cent for the latter with 41.7 per cent of retardation. The elimination rate for both is 63.3 per cent as against 40.3 per cent of retardation.

In table XVIII B the districts have been arranged according to the amount of retardation with the corresponding elimination. District 3 has the highest rate of retardation and also of elimination. Districts 4, 5 and 2 vary little in retardation, but Districts 4 and 5 have much lower rates of elimination than District 2. District 1 has a medium retardation rate, and likewise a medium elimination. District 8 has a retardation which is higher by 2 per cent than that of District 9, but its elimination rate is lower by 11 per cent. District 6 has a rather low rate of retardation, and the lowest elimination. District 7 with a retardation of only 35.5 per cent has an elimination of 72.0 per cent. This great elimination accounts for a mill district with poor social conditions having such a low rate of retardation. District 10 has the lowest retardation rate, 33.3 per cent, and also a low elimination rate, 58.3 per cent. District 6 has a retardation of 37.2 per cent with an elimination of 53.6 per cent. The retardation and elimination rates of Districts 6 and 10 taken together tend to approximate each other, but the social conditions are very different in the two districts. It would seem from what has already been said of District 6 that the adverse conditions had, in a measure, been overcome by supervision. The elimination is low because the retardation is low. It is failure to advance that raises the elimination, as may be seen by the dropping out of large numbers of pupils after the semi-annual promotions.

District 7, with a retardation of 35.5 per cent and an elimination of 72.0 per cent, seems to contradict the statement just made, but it must be remembered that District 7 is a factory district where it is *customary* for the children to go to work as soon as they are fourteen years old. It seems that foreign parents are more anxious that their children should remain in school, when this is possible, if they are making progress.

Summary:

(1) The retardation rate is often misleading in making comparisons where the elimination rate is not known.

(2) The less retardation, if we except abnormal conditions (large proportions of foreign or negro population, factory districts, and in general very low social conditions), the less elimination we find.

(3) Supervision may, by decreasing retardation, also lower the elimination rate.

Retardation by Districts According to the Falkner Method.

In a recent article by Falkner¹ in THE PSYCHOLOGICAL CLINIC, the common method of calculating retardation has been objected to as being cumbersome and not giving the true amount of retardation, because it fails to recognize elimination, which begins at fourteen years of age. It is suggested that retardation be calculated on a basis of the number of thirteen-year-old pupils who have not reached a certain grade, in other words that retardation be calculated at its maximum. The following table compares the retardation of the ten districts as calculated by the two methods.

TABLE XIX. RETARDATION BY FALKNER METHOD AND REGULAR METHOD.

A. IN ORDER OF DISTRICTS.

District	Falkner Method	Regular Method
1	69.3	41.8
2	73.2	44.5
3	76.1	47.0
4	68.9	45.1
5	70.3	44.7
6	62.0	37.2
7	67.3	35.5
8	66.8	38.5
9	65.6	36.0
10	57.6	33.6

B. IN ORDER OF AMOUNT OF RETARDATION.

District	Falkner Method	District	Regular Method
3	76.1	3	47.0
2	73.0	4	45.1
5	70.3	5	44.7
1	69.3	2	44.5
4	68.9	1	41.8
7	67.3	8	38.5
8	66.8	9	36.0
9	65.6	6	37.2
6	62.0	7	35.5
10	57.6	10	33.3

It will be noted that the maximum retardation by the Falkner method is 76.1 per cent in District 3, as against 47.0 per cent in the same district by the regular method, and that the minimum is 57.6 per cent in District 10 as against 33.3 per cent in the same district. Most of the other districts change order in amount of retardation when the Falkner method is used. District 1 is one point out; District 2, two points out; District 4 is three points out; District 5 remains the same. District 6 is one point out; District 7, three points; Districts 8 and 9, each one point out. The falling of District 4 from second place by the regular method

¹Falkner, R. P. The Fundamental Expression of Retardation, THE PSYCHOLOGICAL CLINIC, Vol. IV, No. 8, Jan., 1911, p. 213.

to fifth place by the Falkner method is due to the comparatively low rate of elimination, 57.9 per cent. District 7 changes from ninth place by the regular method to sixth place by the Falkner method on account of its high rate of elimination, 72 per cent.

The Falkner method evidently gives a much truer measure of an educational system if the elimination rate is not known, than does the regular method. On the other hand, it fails to take into consideration the entire number of pupils enrolled. It is valuable as a supplementary method to check up results, and will often make the retardation statistics clearer and uncover facts that otherwise might pass unnoticed.

Summing up the results of this investigation we note that to the pedagogical and psychological factors already recognized as contributing to retardation, we must add a third, the sociological factor.

From the psychological point of view, we see the need of conditions which will make possible the giving of more attention to individual pupils, not only in their school work, but in deciding whether it is for the best interests of the pupil to be promoted or left down, irrespective of the requirements for the average.

From the sociological point of view, we see the need of a flexible course of study. The enrolment of the schools is made up of various sociological units, which with their varying home conditions, must be carefully scrutinized before a fixed course of study is laid down for all. In the case of the negro, it seems that the curriculum at present is entirely unfitted to his capabilities. Apparently, the solution of this problem is to be found only in organizing colored schools with a special curriculum.

Supervision, we have seen, may reduce the retardation to a small extent by making wholesale promotions. This, however, is an attempt to remove the effect without eradicating the cause. On the other hand, by recognizing the psychological and sociological factors in the problem and making adequate provision for them, supervision may reduce the amount of retardation to a minimum.



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